What is claimed is:

1. An optical disc recording method comprising the step of having a groove of an optical disc wobble in accordance with a phase modulation signal obtained through phase modulation of serial data including address information to pre-format the optical disc,

said method further comprising the steps of generating the phase modulation signal with abrupt changes in the waveform thereof at phase transition points being removed in accordance with said serial data, and making said groove wobble in accordance with said phase modulation signal.

2. An optical disc recording method according to claim 1, wherein output level of the phase modulation signal is held substantially constant for a predetermined period of time including said phase transition point at the center thereof.

3. An optical disc recording method according to claim 1, wherein data of a plurality of basic waveforms constituting said phase modulation signal is stored in a memory, data of one of said plurality of basic waveforms corresponding to the serial data is read from the memory, and the data of said basic waveform having been read is converted to analog data, thereby generating said phase modulation signal.

4. An optical disc recording apparatus for pre-formatting an optical disc by having a groove of the optical disc wobble in accordance with serial data including address information, comprising:

a phase modulation circuit for generating phase

modulation signal with abrupt changes in the waveform thereof at phase transition points being removed in accordance with said serial data; and

groove wobbling means for making said groove wobble in accordance with said phase modulation signal.

5. An optical disc recording apparatus according to claim 4, wherein said phase modulation circuit holds output level of the phase modulation signal substantially constant for a predetermined period of time including said phase transition point at the center thereof.

6. An optical disc recording apparatus according to claim 4, wherein said phase modulation circuit comprises a memory for storing data of a plurality of basic waveforms constituting said phase modulation signal, a memory control circuit for reading data of one of said plurality of basic waveforms in accordance with the serial data, and a D/A converter circuit for converting the basic waveform data read from the memory to analog data.

7. An optical disc being pre-formatted with serial data by means of wobbling groove, said serial data including address information, wherein said groove is made wobble in accordance with phase modulation signal of said serial data of which abrupt changes in the waveform thereof at phase transition points are removed.

8. An optical disc according to claim 7, wherein output level of said phase modulation signal is held substantially constant for a predetermined period of time including said phase

transition point at the center thereof.

9. An optical disc recording method comprising the step of having a wall surface on one side of a groove of an optical disc wobble in accordance with serial data including address information to pre-format the optical disc, wherein:

said serial data includes a synchronization signal having a predetermined pattern for detecting a land and the groove, while said serial data including the synchronization signal is modulated into a phase modulation signal with abrupt changes in the waveform thereof at phase transition points being removed, and the wall surface on one side of the groove is made wobble in accordance with said phase modulation signal.

10. An optical disc recording apparatus for pre-formatting an optical disc by having a wall surface on one side of a groove of the optical disc wobble in accordance with serial data including address information, said apparatus comprising:

a synthesizer circuit for synthesizing a synchronization signal having a predetermined pattern for discriminating a land and the groove, with said serial data;

a phase modulation circuit for modulating output of said synthesizer circuit into a phase modulation signal with abrupt changes in the waveform thereof at phase transition points being removed; and

groove wobbling means for making the wall surface on one side of said groove wobble in accordance with said phase modulation signal.

11. An optical disc whereon a wall surface on one side of a

groove wobbles in accordance with serial data including address information, wherein:

said serial data includes a synchronization signal having a predetermined pattern for discriminating a land and the groove; and

said groove is made wobble in accordance with phase modulation signal of said serial data including said synchronization signal of which abrupt changes in the waveform thereof at phase transition points are removed.

12. An optical disc reproduction apparatus for reproducing data from an optical disc, on which a wall surface on one side of a groove wobble formed thereon in accordance with phase modulation signal phase-modulated serial data including a synchronization signal having a predetermined pattern for discriminating a land and a groove and address information, thereby to generate said phase modulation signal with abrupt changes in the waveform thereof at phase transition points being removed, said disc reproduction apparatus comprising:

a phase demodulation circuit for phase-demodulating a groove reproduction signal extracted from a reproduction signal of an optical head; and

a land/groove discrimination circuit for checking pattern of the synchronization signal included in the output of the phase demodulation circuit, and for determining which of the land and the groove is subjected to be reproduced by the optical head.

13. An optical disc reproduction apparatus according to claim

12, further comprising:

a tracking control circuit for applying servo control for tracking of the optical head; and

a polarity inversion circuit for inverting the polarity of a tracking servo signal according to the output of said land/groove discrimination circuit.